In the Claims:

1 - 4. (Cancelled)

5. (Currently Amended) Heart control apparatus, comprising circuitry for generating a non-excitatory stimulus, and stimulus application devices for applying to a heart or to a portion thereof said non-excitatory stimulus, wherein said circuitry for generating a non-excitatory stimulus generates a stimulus which is unable to generate a propagating action potential, configured for applying a first stimulus to a first portion of the heart, said first stimulus having a first effect on the biomechanical behavior of the first portion of the heart, and a second stimulus to a second portion of the heart, said second stimulus having a second effect on the biomechanical behavior of the second portion of the heart, said first and second effects being different from each other.

6 - 9. (Cancelled)

10. (New) Heart control apparatus according to claim 5, wherein the first portion of the heart is the right ventricle and the second portion of the heart is the right ventricle.

11. (New) Heart control apparatus according to claim 5, configured for modifying the relation between the contraction of the left ventricle and the contraction of the right ventricle.

12. (New) Heart control apparatus according to claim 5, configured for simultaneously controlling both ventricles, one control increasing the flow form one ventricle while the other control decreases the flow from the other ventricle.

13. (New) Heart control apparatus according to claim 5, configured for simultaneous application of said first and second stimuli.

14. (New) Heart control apparatus according to claim 5, configured for controlling the heart for a few beats, every certain period of time.